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Shifting from Theory to Practice: Effective Instructional Design and Learning Material Production

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ABSTRACT: This article investigates the synthesis of learning and instructional theories within the manufacturing process of efficacious learning and instructional resources, a critical endeavor in the current, dynamic educational environment. The discussion highlights the movement toward empirically supported methodologies and the evolution of the educator's function into that of a proficient facilitator. Whereas learning theories (e.g., Behaviorism, Cognitivism, Constructivism) offer conceptual structures for comprehending the mechanisms of human learning, instructional theories provide direction on the methods to support this learning. The text posits instructional design as the methodical framework for converting these abstract tenets into tangible, impactful learning engagements and resources. This paper provides a detailed account of how principles from various learning theories shape the creation and development of assorted materials, from conventional text-based resources to interactive digital platforms, all customized to align with learner attributes and specific objectives. The importance of addressing practical constraints such as budget, requisite technical expertise, and user accessibility during the production phase is also emphasized. Conclusively, the purposeful integration of established theory into instructional design and material creation promotes individualized learning

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pathways, sharpens critical reasoning abilities, and elevates overall educational outcomes, thereby bridging the divide between abstract knowledge and its concrete application in the classroom.

Keywords: *Pedagogical Theory, Instructional Systems Design, Theory-Practice Gap, Educational Material Development, Learning Frameworks.*

1. INTRODUCTION

Over the last twenty years, the educational sector has undergone a profound transformation, marked by an escalating focus on empirically-backed methodologies and systematic instructional design. Educators, whose roles were traditionally centered on content dissemination, are increasingly required to operate as adept practitioners capable of skillfully guiding the learning process to promote student achievement. This fundamental change in paradigm demands a more sophisticated comprehension of learning theories and their tangible implementation within the classroom setting. Learning theories establish a conceptual basis for interpreting how people assimilate and acquire knowledge. They furnish insights into cognitive functions, motivational factors, and social dynamics, all of which represent essential components of effective pedagogy. By anchoring their teaching methods in robust theoretical principles, educators can curate learning experiences that are more engaging, significant, and effective.

The primary difficulty, however, remains in the translation of abstract theoretical concepts into viable classroom strategies. It is incumbent upon teachers to connect the dots between theoretical understanding and the day-to-day operational realities of the classroom, modifying their instructional approaches to accommodate the varied needs and learning preferences of their students. This necessitates not only a comprehensive grasp of learning theories but also the capacity to deploy them with creativity and adaptability. A methodical approach to the planning, creation, and execution of learning experiences is the hallmark of effective instructional design. This process spans a broad spectrum of activities, such as needs analysis, formulation of instructional goals, selection of learning activities, and methods for assessment and evaluation. Adherence to a structured methodology allows educators to confirm

that their instruction is congruent with learning objectives and adequately serves the student population (Aregbesola, Ojelade, & Haastrup, 2022).

As technological progress accelerates, learning and instructional resources are assuming an increasingly vital role within the instructional framework. Today's technologically proficient students are distinguished by their capacity for creative and critical thought, their ability to link concepts across disciplines, their function as active collaborators, and their scientific orientation. These attributes are reshaping the conventional perception of the teacher, which was historically confined to instruction using legacy tools like chalkboards, whiteboards, and prescribed textbooks. Concurrently, the modern learning-instruction dynamic, with its embrace of learner-centric philosophies, has seen a distribution of pedagogical control, empowering learners to engage with educational materials independently. A central tenet of robust instructional design is student-centered learning. This philosophy reorients the focus from instructor-led delivery to the cultivation of learning experiences that are pertinent, captivating, and significant for the students. When learners perceive a connection to the educational content and recognize its relevance, their intrinsic motivation to learn is substantially more likely to increase. Aregbesola et al. (2021) noted that student-centric activities frequently compel students to analyze, appraise, and synthesize information, thereby honing critical thinking capabilities. A learning environment where students feel acknowledged, respected, and empowered is one that is more likely to foster engagement and academic success. For teachers to successfully integrate learning theories into their practice, they must possess a nuanced understanding of theoretical principles, an aptitude for adapting these principles to particular contexts, and a dedication to continuous professional growth. By prioritizing student-centered learning and crafting stimulating, relevant experiences, educators can cultivate a positive and effective learning atmosphere conducive to student success.

It is imperative to integrate requisite theories of learning and instruction during the development phase of materials intended for learning and instruction. The fundamental purpose of producing such materials is to facilitate the seamless and efficient achievement of educational goals. Given the rising cohort of students with

significant technological fluency, there is a pronounced need to fuse learning theory and instructional theory into the development of educational resources, while simultaneously ensuring these resources adhere to established pedagogical principles. This research paper endeavors to examine the importance of embedding learning and instructional theories into the production of learning and instructional materials, as well as the potential advantages this integration offers to both educators and learners. In doing so, our objective is to narrow the gap between learning theory, instructional theory, and the practical development of educational resources. We also seek to advance the ongoing discourse on refining educational practices and empowering learners through the creation of effective learning and instructional materials that are informed by sound pedagogical foundations. Consequently, this paper investigates the transition from theory to practice through the lens of effective instructional design for educators.

2. DEFINING CONCEPTS

Concept of Learning

Mayer (2014) characterized learning as a complex and fluid operation involving the procurement, development, and utilization of knowledge, abilities, and dispositions, which is shaped by both personal and environmental variables. This particular definition can be interpreted as an elaboration on the one proposed by De Houwer, Bames-Holmes and Moors (2013), which described learning as "ontogenetic adaptation—that is, as changes in the behavior of an organism that result from regularities in the environment of the organism." Learning outcomes are optimized when appropriate materials are developed and skillfully employed. For teaching and instructional resources to be deemed sufficient, they must be fortified with the essential collection of ideas, laws, principles, and theories. Reflecting this, Boaz (1984) perceived learning as a process “by which the individual acquires various habits, knowledge, and attitudes that are necessary to meet the demands of life, in general.” From these definitions, several key facts emerge:

- Learning constitutes a modification in behavior.
- Learning involves the organization of behavior.
- Learning represents the validation of a new process.

We can, therefore, posit that learning is a relatively enduring alteration in a learner's behavior, precipitated by experiences or practice essential for addressing life's challenges, and which consequently modifies personality traits.

Concept of Instruction

Instruction typically serves as a primary element or method of teaching, concentrating specifically on the "what" and "how" of the subject matter being conveyed. Ormrod (2015) articulated instruction as “the deliberate process of transmitting information and facilitating learning experiences to promote intellectual and cognitive growth in students.” Knight (2017) regarded it as encompassing “a planned set of activities, strategies, and resources aimed at facilitating effective learning and promoting student understanding.” Kridel (2010) offered a definition of instruction as “the creation and implementation of purposefully developed plans for guiding the process by which learners gain knowledge and understanding, and develop skills, attitudes, appreciations and values.” It entails the delivery of structured guidance and support to learners to aid in the acquisition of designated knowledge, skills, and attitudes (Bastable, 2017).

Instruction is commonly linked with the term ‘curriculum’ and broadly denotes the pedagogical methods and learning activities an educator employs to implement the curriculum within the classroom. The terms ‘teaching’ and ‘instruction’ are frequently treated as synonyms; however, teaching is a broader concept that *encompasses* instruction. When an educator provides specific directives, clarifies facts, illustrates a procedure, or drills students on information, they are participating in instruction as a facet of their overall teaching practice. Smaldino (2017) described instruction as “any intentional effort to stimulate learning by the deliberate arrangement of experiences to help learners achieve a desirable change in capability.” Thus, we can assert that the term instruction is chiefly concerned with imparting distinct knowledge, skills, or procedures. It addresses *how* to perform an action or *what* specific information entails. For instance, a teacher *instructing* pupils on the method for solving a particular category of math problem, or a manual *instructing* a user on the assembly of furniture.

Viewed holistically, education pertains to the teaching and learning of knowledge, skills, and attitudes, and all activities purposefully designed to facilitate learning. Consequently, the act of educating involves either teaching or instruction, and effective instruction is heavily dependent on thoughtfully selected learning and instructional materials to render concepts tangible and promote student comprehension.

Concept of Learning and Instructional Materials

Instructional materials denote the human and non-human resources and facilities that can be leveraged to simplify, motivate, enhance, and advance teaching and learning activities. They constitute a wide array of resources utilized to enable effective instruction. These materials are defined as resources that structure and support instruction, including textbooks, assigned tasks, and supplementary aids. Stated differently, instructional and learning materials represent a diverse range of resources, both human and non-human, that an educator utilizes to effectively convey information and guidance to the learners in their classroom. Lewis (2019) provided a broad definition of learning and instructional materials as a "spectrum of educational materials that teachers use in the classroom to support specific learning objectives, as set out in lesson plans." They comprise both human and non-human elements and facilities that serve to ease, inspire, and elevate the learning process. These materials encompass all forms of resources applied to facilitate effective instruction. While "learning materials" and "instructional materials" are distinct terms, they possess similar meanings and can often be used interchangeably. They refer to resources employed by an educator during the teaching process to render instruction less abstract, more engaging, and more easily comprehensible. Examples include pictures, charts, diagrams, models, and audio-visual displays. The development of learning and instructional materials is guided by principles derived from learning theories to bolster and enrich the learning process.

Concept of Learning Theory (LT)

A learning theory can be articulated as a conceptual framework or a collection of ideas formulated over time to delineate how students receive, process, and store

information; it also clarifies the principles upon which instruction is predicated. According to Ertmer (1993), "learning theory describes how students absorb, process, retain, and recall knowledge during learning." Consequently, learning theories can be understood as sets of concepts that assist in elucidating learning principles, concepts, and the contexts in which learning or instruction occurs. A learning theory endeavors to explain how individuals acquire, process, retain, and recall knowledge throughout the learning experience (Gandhi and Mukherj, 2022). It can also be described as an "abstract frameworks that describe how knowledge is received and processed during the learning experience" (Reid, 2023). Learning theories aim to clarify the complete process and product of learning, encompassing how knowledge is taken in, manipulated, and retrieved during the learning sequence. These theories are an indispensable component that must be factored in when formulating an instructional design. Prominent examples of learning theories include behavioral, cognitive, and constructivism.

The table below provides a breakdown of the distinctions and commonalities among these learning theories.

Table 1. Sample Differences between Behaviorism, Cognitivism and Constructivism Theories

Behavioral	**Cognitive**	**Constructivism**
Learner is viewed as *tabula rasa* (blank slate).	Learner is viewed as an information processor.	Learners actively construct their own knowledge.
Theories focused on observable, measurable behavior.	Seeks to understand the process of knowledge acquisition.	Continuous construction of knowledge from learning experience.
Old behaviors are amended to accommodate new information.	Learner builds relationship between new information and prior knowledge.	Learner uses prior knowledge to generate new ideals.
Direct instruction.	Guided instruction.	Minimally guided instruction.
Focuses on observable behavior.	Focuses on mental activity and process.	Focuses on buildup of learning process from prior to new knowledge.

Programmed tutoring.	Instructor creates an environment where thinking activities are processed.	The instructor facilitates an active learning environment with a constructive approach.
Direct instruction.	Sorting activities and note-taking are used.	Strategies like interactive groups are used.
Examples: pre-test, comprehension checks; facilitate learning through assessment that follows practice, repetition.	Examples: corrective feedback, learning strategies like analogy, metaphor, concept mapping; remove irrelevant information.	Example: apprenticeships, clinics, collaborative learning; encourage in a variety of contexts and perspectives.
Type of learning: basic definitions and explanations of concepts; generalization, recall.	Type of learning: higher-level reasoning and information processing; emphasis on memory, organization.	Type of learning: higher-level problem solving and critical analysis; emphasis on real-world scenarios.
Reactive.	Proactive.	Highly Proactive.

All three of the theories discussed endeavor to explain and delineate the mechanisms of learning and perceive education and the instructional process in its entirety.

Table 2. Similarities between Behaviorism, Cognitivism and Constructivism

Behavioral Theory	**Cognitive Theory**	**Constructivism Theory**
Is a Learning theory	Is a Learning theory	Is a Learning theory
Uses technology in the learning process	Uses technology in the learning process	Uses technology in the learning process
Learning is external	Learning is internal	Learning is internal

Importance of Learning Theories

Learning theories serve as the foundation of effective teaching and instructional design. They provide educators with frameworks to understand how students learn, think, and behave—helping teachers respond to diverse classroom needs.

An understanding of behaviorist theories enables teachers to use repetition and reinforcement to shape learning; social learning theories highlight the role of modeling and observation; while cognitive theories explain how learners process information and why “learning by doing” strengthens understanding.

By applying these theories, educators can:

- Design lessons that align with learners’ motivations and abilities.
- Manage classroom behavior more effectively.
- Predict and evaluate learning outcomes.
- Bridge the gap between research and classroom practice.
- Reflect on and continually improve their teaching methods.

For instructional designers, learning theories offer a shared language and evidence-based foundation for creating learning materials that meet students’ needs and promote meaningful engagement. As Harasim (2017) notes, familiarity with learning theories helps educators refine their practice and contribute to the growth of the discipline. Ultimately, these theories connect theory to practice, ensuring teaching remains both purposeful and effective.

Concept of Instructional Theory

Instructional theory is the ideas of how teachers should teach. It pertains to frameworks that offer explicit guidance on methodologies for helping students learn and develop more effectively. These theories provide educators with specific approaches for evaluation (Chukwuemeka et al., 2020). The objective of such theories is to delineate how to best support human learning and development. Aided by instructional theories, "instructional designers focus on how to best structure material and instructional behavior to facilitate learning" (Phillips, 2014). Consequently, instructional theory offers insight into the probable occurrences during the teaching and learning process and the rationale behind them, especially concerning different types of pedagogical activities, while also suggesting methods for their assessment. Instructional theory is modified based on the students' learning

styles and the specific educational content. It is composed of various methods, models, and strategies for instruction. Examples of Instructional Theories include Merrill's Principles of Instruction, Elaborative Interrogation Theory, and Merrill's Component Display Theory (CDT), among others.

3. RELATING LEARNING THEORIES WITH LEARNING/INSTRUCTIONAL MATERIALS

Behaviorism Theory and Learning Materials

The behaviorist learning theory is rooted in the belief that human learning is primarily shaped by external, observable factors rather than internal mental processes. In other words, learning occurs when a person's behavior changes as a result of interactions with their environment. Reimann (2018) emphasizes that behaviorism considers learning to be "influenced solely by physical variables such as environmental or material reinforcement." This perspective frames learning as a scientific and measurable process, focusing on how environmental stimuli can produce predictable responses from learners.

Behaviorists such as B.F. Skinner and John B. Watson viewed learning as a form of conditioning, where behavior can be trained and modified through repetition, rewards, and consequences. Two key mechanisms underlie this process: classical conditioning (learning through association) and operant conditioning (learning through reinforcement and punishment) (Kendra, 2022). For example, in classical conditioning, a student may learn to associate praise from a teacher with completing a task correctly, while in operant conditioning, they may be motivated to repeat a desired behavior because it results in a reward, such as good grades or recognition.

At the core of behaviorism is the idea that learning can only be verified when a change in behavior is observed. If students are unable to demonstrate the skills or knowledge taught, behaviorists would conclude that learning has not occurred. This is why reinforcement—continuous and immediate feedback—is so crucial in a behaviorist framework. Reinforcement serves as a signal to learners that their behavior aligns with the expected outcome. In modern classrooms, such

reinforcement often comes through test scores, graded assignments, verbal praise, or digital feedback in e-learning platforms.

However, one major limitation of behaviorism lies in its relative neglect of internal cognitive processes such as thinking, understanding, and problem-solving. Critics argue that while behaviorist methods can train learners to perform specific tasks, they may not foster deeper comprehension or creativity. In other words, students may learn *what* to do but not necessarily *why* they are doing it.

Despite this limitation, behaviorist principles remain valuable in designing learning materials, particularly where clear structure, repetition, and reinforcement are required. In a modern behaviorist classroom, instructional materials should be designed to provide **immediate** feedback, reward correct responses, and encourage the formation of positive learning habits. For instance, educational software and learning apps often integrate points, badges, or progress bars to reinforce engagement and motivate continued participation.

In today's digital age, where mobile phones, computers, and interactive games constantly compete for students' attention, teachers can creatively adapt behaviorist strategies to harness these tools rather than fight against them. Digital learning environments can incorporate behaviorist techniques such as discrimination (distinguishing between correct and incorrect responses), generalization (applying learned behavior to new contexts), association (linking new knowledge to familiar cues), and chaining (breaking complex tasks into smaller, linked steps).

By thoughtfully integrating these behaviorist principles into learning materials and classroom activities, educators can promote consistency, motivation, and skill mastery—key components for effective learning, especially in structured subjects or skill-based training.

Cognitive Theory and Learning Materials

The cognitive learning theory presents learning as an active, purposeful, and internal process that focuses on how individuals acquire, organize, and use knowledge. Unlike behaviorism, which emphasizes observable changes in behavior, cognitive

theory highlights what happens inside the learner's mind – how information is perceived, processed, stored, and retrieved. It stresses that effective learning occurs when students understand *how* to think, not just *what* to think. This perspective encourages teaching methods that help learners develop strategies for attention, comprehension, memory, and problem-solving.

Cognitive theorists argue that the learner is not a passive recipient of information but an active participant who constructs meaning based on prior experiences. The theory therefore emphasizes processes such as attention, perception, encoding, storage, and retrieval—all of which determine how knowledge is built and retained. In essence, learning is seen as a mental activity that involves organizing information into cognitive structures or schemas, which help learners make sense of new ideas and connect them to what they already know.

One of the most influential contributions to cognitive learning theory is Jean Piaget's theory of cognitive development, which explains how human thinking evolves in stages as individuals grow and interact with their environment. Piaget proposed four distinct stages of intellectual growth:

1. **Sensorimotor Stage (0–2 years)**: learning occurs through sensory experiences and motor actions; infants begin to understand cause and effect.
2. **Preoperational Stage (2–7 years)**: children develop language and imagination but still think in concrete, egocentric terms.
3. **Concrete Operational Stage (7–11 years)**: logical thinking begins to emerge; learners can perform mental operations on concrete objects.
4. **Formal Operational Stage (12 years and above)**: individuals develop abstract reasoning and hypothetical thinking (Kendra, 2022).

These stages highlight that learners think and understand differently depending on their developmental level, implying that instructional materials should align with the learner's cognitive capacity.

Cognitive theory also emphasizes meaningful learning, where new information is linked to prior knowledge. This connection allows learners to integrate, organize, and retain information more effectively. In a cognitively oriented classroom, learning is demonstrated when students can recall, comprehend, analyze, and apply knowledge independently. Mastery is not only shown through correct answers but through the learner's ability to explain concepts, make connections, and use knowledge to solve new problems.

To support this process, effective cognitive learning materials should include three key components: comprehension, memory, and application. Materials should be learner-centered, providing opportunities for active engagement rather than rote memorization. They should feature meaningful exercises, problem-based tasks, and reflective activities that promote discovery learning. For instance, using concept maps, case studies, simulations, or guided inquiry tasks can help learners develop deeper understanding.

Furthermore, instructional content grounded in real-life or meaningful experiences enhances learners' ability to internalize concepts. Teachers can encourage students to relate classroom lessons to everyday contexts, thereby reinforcing knowledge retention and application.

Cognitive theory transforms the role of both the teacher and the learner. The teacher becomes a facilitator who guides learners in organizing and integrating new information, while learners become active participants in constructing their understanding. When designed effectively, cognitive-based learning materials cultivate independent thinkers capable of lifelong learning and creative problem-solving.

Constructivism Theory and Learning Materials

Constructivism is a learning theory grounded in the belief that learners actively construct their own understanding of the world through experience and reflection. Rather than viewing knowledge as something transmitted from teacher to student, constructivism posits that learning occurs when individuals engage meaningfully

with their environment and draw upon prior experiences to make sense of new information. In essence, knowledge is *constructed*, not *received*.

The constructivist approach sees learning as a dynamic and interactive process of meaning-making. Learners are not empty vessels waiting to be filled with facts but active participants who organize, interpret, and reshape information to form personal understanding. According to this view, true learning happens when students are able to create, conceptualize, apply, visualize, and integrate ideas into their existing cognitive frameworks. This process is often supported through exploration, collaboration, and problem-solving rather than passive listening or rote memorization.

A key tenet of constructivism is that knowledge construction is influenced by both social interaction and contextual experience. Scholars such as Jean Piaget and Lev Vygotsky have made important contributions to this theory. While Piaget emphasized the individual's internal process of building knowledge through discovery, Vygotsky focused on the social dimension—asserting that learning is mediated through language, culture, and interaction with others. This suggests that collaborative learning, dialogue, and peer engagement are essential for deeper understanding.

In a constructivist classroom, the teacher's role shifts from that of a knowledge transmitter to a facilitator and guide who supports learners in exploring questions, investigating problems, and testing ideas. The environment is typically student-centered, emphasizing inquiry, creativity, and reflection. Students take ownership of their learning, becoming active thinkers capable of setting goals, making decisions, and evaluating their progress.

The design of learning materials within a constructivist framework must therefore reflect these principles. Materials should encourage learners to explore, question, experiment, and reflect on their learning experiences. Effective constructivist materials often include open-ended activities such as project-based tasks, case studies, simulations, experiments, debates, or problem-solving challenges that invite multiple perspectives. These activities stimulate curiosity and enable learners to

apply knowledge in authentic contexts, making learning both relevant and meaningful.

Furthermore, constructivist materials should promote metacognition—the ability of learners to think about their own thinking. Reflection journals, group discussions, and self-assessment tasks help learners become aware of how they learn and where they need improvement. This reflective process transforms knowledge from mere information into personal understanding.

In a constructivist learning environment, interaction is key. Learners engage not only with content but also with their peers, teachers, and the broader environment. Such engagement nurtures autonomy, collaboration, and critical thinking skills essential for lifelong learning.

Constructivism redefines education as a participatory, learner-driven process. Learning materials and classroom strategies should, therefore, inspire students to build knowledge through inquiry, imagination, invention, and reflection. By situating learning in authentic, experiential, and social contexts, educators can empower students to become independent thinkers who can apply their understanding to real-world challenges.

4. INSTRUCTIONAL DESIGN (ID)

Instructional design implies a systematic or intensive planning phase preceding the development of learning and instructional materials. It can also be conceptualized as the execution of sequential plans to resolve a problem. Instructional design (ID), also identified as instructional systems design (ISD), is the systematic practice of creating, developing, and delivering instructional materials and experiences, in both digital and physical formats, in a consistent and reliable manner. The goal is the efficient, effective, appealing, engaging, and inspiring acquisition of knowledge (Chukwuemeka et al., 2020). Instructional design can alternately be viewed as the optimization of learning processes, giving consideration to three essential needs: the learning task itself, the design of the learning material, and the activation of the learner's cognitive processes during learning (Klepsch and Seufert, 2020). It "is the systematic procedure in which educational or training programme, curricula or

courses are developed and composed aiming at a substantial improvement of learning" (Seel, Lehmann, Blumschein, et al., 2017). In essence, instructional design can be defined as determining what should be presented to the learner and how it ought to be presented to fulfil the instructional goals. It is the creation of instructional materials, modules, or lessons aimed at realizing an effective and engaging teaching and instruction experience. It is the **systematic process** of creating effective learning experiences.

Instructional Design Process

Typically, the instructional design process entails the following steps:

1. **Analyzing the requirement:** The ability to assess the needs for the materials to be designed.
2. **Identifying learners' objectives:** The designer must determine the learners' goals. (e.g., "What are my learners' objectives?")
3. **Design development:** This involves selecting the appropriate design type. (e.g., "What type of design should I use?")
4. **Create a storyboard/plan:** This is the stage for strategizing the execution of the research design.
5. **Develop a prototype:** A sample of the design is created.
6. **Develop a training guide:** A manual or guide is produced to assist others in using the design correctly.
7. **Delivery of training:** The design is communicated to others, often through training sessions, workshops, etc.
8. **Evaluating impact:** The progress and effect of the design on learners are measured.

Instructional Design Model (IDM)

An instructional design model (IDM) offers guidelines for organizing suitable pedagogical scenarios to realize instructional goals (Serhat Kurt, 2021). Branch &

Kopcha (2014) asserted that "instructional design is intended to be an interactive process of planning outcomes, selecting effective strategies for teaching and learning, choosing relevant technologies, identifying educational media and measuring performance." An instructional design model can, therefore, be defined as the practice of creating or selecting instructional experiences to help facilitate learning in the most effective manner.

Some Instructional Design Models Include: ADDIE Model, MERRILL'S Principles of Instruction, BLOOM'S Taxonomy, GAGNE'S Nine Events of Instruction, DICK and CARRY Model, KEMP'S Instructional Design Model, ASSURE Model among others (Chukwuemeka et. al., 2020).

Examining Relationships

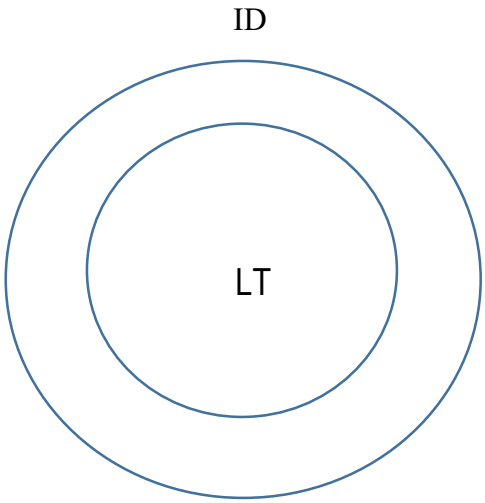

Fig. 1 Relationship between Learning Theories (LT) and Instructional Design (ID)

As depicted in the diagram above, learning theories (LT) are embedded within instructional designs (ID). They represent integral facets of Instructional Design. Instructional designers depend on learning theories and models to craft learning solutions that satisfy the learners' needs (Oyarzun, and Conklin, 2020). This signifies that for an instructional design to be successful, learning theories must be inclusively considered. By doing so, the learners' objectives, interests, and learning styles are taken into account. Learning theories also provide designers with the language and structure to communicate their designs and research, offering evidence that their

designs will be effective. The application of learning theories underpins the process of instructional design and justifies the design as effective for the potential learner.

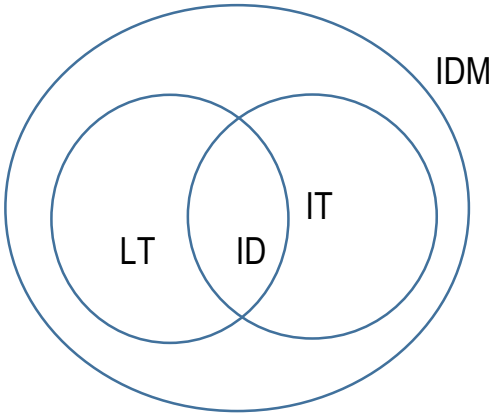

Fig. 2 Relationship between Learning Theory, Instructional Theory and Instructional Model

The diagram above illustrates that for an Instructional Design Model (IDM) to be produced, an integration of Learning Theories (LT) and Instructional Theories (IT) is necessary. It is also evident that both learning and instructional theories are applied within Instructional Design (ID). To connect these concepts—learning theories, instructional theories, instructional design models, and pedagogy—we must first differentiate these categories. In its simplest form:

- **Learning Theory:** Ideas about *how people learn*. (Example: Cognitive theory)
- **Instructional Theory:** Ideas about *how people should teach*. (Example: Discovery Learning)
- **Instructional Design Model:** A specific "recipe" or process for *creating an instructional intervention*. (Example: ADDIE Model)

5. PRODUCTION OF INSTRUCTIONAL MATERIALS

The Instructional Design Model (IDM) furnishes a systematic framework for the creation of effective learning experiences. Adhering to the iterative stages of analysis, design, development, implementation, and evaluation (ADDIE) ensures a structured methodology for crafting instructional interventions. The apex of this design process is the actual production of instructional materials. This vital phase

entails translating the IDM's blueprints into tangible resources with which learners will interact to achieve the specified learning objectives.

The production stage is the nexus where pedagogical considerations meet practical execution. It demands meticulous attention to detail, creativity, and a steadfast focus on generating materials that are not only congruent with learning theories and instructional strategies but are also engaging, accessible, and user-friendly for the target audience. This process can involve the creation of a diverse array of resources, including but not limited to:

- **Text-based materials:** These might encompass textbooks, workbooks, handouts, reading assignments, and online articles. Scrutiny must be applied to ensure clarity, conciseness, and appropriate language.
- **Visual aids:** Graphics, charts, diagrams, photographs, illustrations, and infographics can augment understanding and engagement, catering to visual learners and simplifying complex information.
- **Audio and video resources:** Podcasts, audio recordings, instructional videos, and animations can deliver information in dynamic and captivating ways, accommodating various learning preferences.
- **Interactive elements:** Simulations, educational games, quizzes, interactive exercises, and online modules can furnish opportunities for active learning and immediate feedback.
- **Assessment tools:** Tests, quizzes, rubrics, and performance-based tasks must be developed to measure learning outcomes effectively and provide learners with insights into their progress.

The specific categories of materials produced are dictated by the learning objectives, the characteristics of the learners, the selected instructional strategies, and the available resources. Irrespective of the format, the production process must prioritize clarity, accuracy, accessibility, and alignment with the overarching instructional design. It is at this juncture that the theoretical foundations of learning and

instruction are manifested in concrete form, directly influencing the learner's experience and the efficacy of the educational intervention.

Following this critical stage of bringing the design to fruition, several practical factors must be meticulously weighed to ensure the successful finalization and implementation of these instructional materials.

Factors Affecting the Production of Instructional Materials

The production of instructional materials is influenced by several interrelated factors that determine their quality, effectiveness, and usability. These factors must be carefully considered to ensure that the materials meet instructional goals and cater to learners' needs. Key considerations include:

- **Learning Style:** Different learners absorb information in different ways for example; some through visual aids, others through listening or hands-on activities. Understanding learners' preferred styles helps in designing materials that appeal to multiple senses and enhance comprehension.
- **Objectives of Instruction:** The purpose of instruction determines the type of material to be produced. Clear instructional objectives ensure that the materials align with desired learning outcomes and effectively support teaching goals.
- **Audience or Learners' Characteristics:** Age, educational background, prior knowledge, and cognitive ability of learners influence the design and complexity of instructional materials. Materials should be appropriate for the learners' level of understanding and cultural context.
- **Availability of Equipment:** The tools and technology available for producing and using the materials such as printers, projectors, or computers, affect both the design and production process. Limited access to equipment may require simpler, low-tech alternatives.
- **Cost of Production:** Financial resources often determine the scope and quality of materials produced. Educators must balance effectiveness with affordability to ensure sustainability and accessibility.

- **Technical Know-how:** The skill level of the teacher or designer plays a crucial role. Adequate knowledge of design tools, software, and production techniques ensures professional and functional outcomes.
- **Time:** Time constraints can influence the depth, design, and polish of the final product. Effective planning and prioritization are essential to meet instructional deadlines without compromising quality.
- **Facilities for Use:** The availability of facilities or environments where the materials will be used such as classrooms, laboratories, or digital platforms determines their suitability and effectiveness after production.

Integrating Behaviorism, Cognitive, and Constructivism in the Production of Learning Materials

An effective learning/instructional resource is one that harmoniously integrates multiple learning theories (behaviorism, cognitivism, and constructivism) to accommodate the diverse needs of learners. In a modern classroom, students display a wide range of behaviors, learning abilities, cultural backgrounds, and preferences. No single theoretical approach can adequately address this diversity. While some learners thrive in a structured, reinforcement-driven environment inspired by behaviorism, others perform best when guided by cognitive strategies that foster understanding and memory. Still, many benefit most from constructivist approaches that encourage exploration, collaboration, and personal meaning-making. Hence, designing instructional materials that strategically blend these perspectives ensures that every learner is engaged and supported.

Although cognitive theory remains the dominant framework in modern instructional design, elements from behaviorism and constructivism continue to play critical roles. In fact, many strategies first introduced by behaviorists have been refined and adapted by cognitivists. For example, behaviorists focus on assessing learners' observable behaviors to determine readiness for instruction, while cognitivists extend this practice by analyzing learners' prior knowledge, motivation, and mental predisposition to learning. This overlap illustrates that instructional design is not

bound to one theory but often operates at the intersection of multiple perspectives, particularly between the behaviorist and cognitive paradigms.

When designing learning materials from a behaviorist/cognitivist standpoint, the process typically follows a systematic and goal-oriented path. The designer begins by analyzing the learning situation and defining specific learning goals. The content is then broken down into smaller, manageable tasks, and measurable learning objectives are created. Assessment is used to determine whether learners have met these objectives, often through quizzes, performance tasks, or digital feedback tools. In this paradigm, the teacher or designer largely directs the learning process thereby determining what should be learned, how it should be presented, and when mastery has been achieved.

Conversely, designing from a constructivist approach shifts the focus from teaching to facilitating learning. Here, the designer creates an environment that encourages inquiry, exploration, and reflection rather than prescribing a fixed path of instruction. The content is often emergent, shaped by learners' interests, questions, and experiences. Assessment in this framework is more authentic and subjective, emphasizing process over product. Rather than relying solely on conventional paper-and-pencil tests, learners are evaluated through reflective journals, portfolios, project drafts, presentations, and digital artifacts that showcase their evolving understanding. Modern technology enables much of this assessment to occur online, allowing for multimedia submissions, peer collaboration, and iterative feedback.

Kathrin Becker (2015) notes that because constructivist learning is open-ended and learner-driven, it can be more complex and time-consuming to design compared to traditional behaviorist or cognitive approaches. Systems-based designs rooted in behaviorism and cognitivism are often more efficient, cost-effective, and easier to manage within institutional constraints. However, they may lack the depth of engagement and personalization that constructivist learning fosters.

According to Chukwuemeka et al. (2020), in practice, no single theory should dominate the instructional design process. A synergistic integration of behaviorist, cognitive, and constructivist principles yields the most effective results. For example,

a lesson might begin with behaviorist techniques such as structured drills or immediate feedback to establish foundational skills; proceed to cognitive strategies like concept mapping and guided practice to promote understanding; and culminate in constructivist activities such as collaborative projects or real-world problem-solving tasks to deepen learning.

This balanced approach ensures that learning materials not only deliver information efficiently but also cultivate critical thinking, creativity, and autonomy. Ultimately, the fusion of these three theories creates a dynamic learning environment that supports both mastery of content and the development of lifelong learning skills.

Expected Outcomes

The integration of learning theories and instructional theories into the production of learning and instructional materials:

- **Allows for more personalized and adaptive learning experiences.** By leveraging technology and incorporating interactive elements, instructional materials can be customized to individual learners, accommodating their specific needs and furnishing immediate feedback.
- **Promotes the development of critical thinking and problem-solving skills among learners.** By encouraging learners to actively engage with the content and apply their knowledge in practical situations, learning and instructional materials that incorporate constructivist principles foster a deeper level of understanding and retention.
- **Ensures the teacher will more consistently meet the goals** of the lesson, the school, and the students.

6. CONCLUSION

In conclusion, this research paper has highlighted the essential requirement for the purposeful integration of learning theories and instructional theories in the development of effective learning and instructional materials. As we have examined through the perspectives of behaviorism, cognitivism, and constructivism, a

theoretically grounded approach to instructional material creation possesses significant potential for augmenting learning experiences. Educators are required to meticulously evaluate specific learning objectives, the diverse attributes of their audience, and appropriate instructional strategies to fashion resources that genuinely resonate and facilitate meaningful learning. Furthermore, the cyclical procedure of evaluation and revision remains indispensable for guaranteeing the persistent relevance and impact of these materials.

The vision of learning resources that skillfully interweave principles from behaviorism, cognitivism, and constructivism—perhaps by scaffolding learning via structured activities, nurturing cognitive processing through engaging tasks, and fostering active knowledge construction via collaborative projects—presents a potent pathway for catering to a broader spectrum of learners and deepening their comprehension. Ultimately, the creation and efficacious use of theoretically sound instructional materials are foundational to achieving successful learning outcomes. Moving forward, addressing the inherent challenges in this integration process will be paramount to fully harnessing the potential for creating truly impactful educational resources.

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